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PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON
SERIES B. TAXONOMY

VOLUME 5. 1936.

DESCRIPTION D'UN *PAROMALUS* (COL. HISTERIDAE)

Par A. DE COOMAN

Communicated by G. J. ARROW, F.R.E.S.

Paromalus fossisternus n. sp.

Breviter ovalus, subdepressus, niger, nitidus. Caput punctatum, lateribus supra oculos tumidum, stria integra antice rotundata, ante oculos brevissime interrupta. Pronotum in disco aciculate, lateribus rugose punctatum, impressione valida postoculari, stria integra marginibus proxima, pone caput remotiore. Elytra, regione circascutellari excepta, rugose punctata, basi extus transversim impressa, sutura elevata laevi; striis: basali obliqua dimidiata suciformi, marginali integra apice suturam attingente, epipleurali apicali brevi. Propygidium et pygidium aequaliter et undique dense punctata. Prosternum latum, laeve, striis parallelis, apice et antice breviter introcurvatis, haud con-

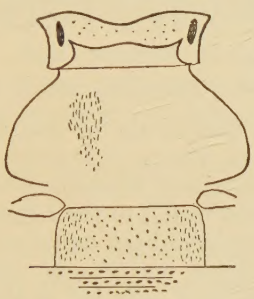


FIG. 1.—*Paromalus fossisternus* sp.n. Striation sternale.

junctis, lobo marginato subrugose punctato. Mesosternum basi bisinuatum, antice sparse puncticulatum, utrinque longitudinaliter foveolatum; striis: marginali nulla; transversa mediana lata bisinuata, utrinque angulata, angulis acute productis, arcu laterali brevi, oblique in metasterno prolongata et ante coxas posteriores recurvata; sutura meso-metasternali levissima recta. Metasternum impunctatum, subtiliter alutaceum, in medio parum convexum. Primum segmentum abdominis in medio sparse punctulatum, stria laterali recta; alia segmenta punctata. Tibiae anticae tridentatae; intermediae trispinosae; posticae sine spina praeapicali. Long. 1·6 (cap. et pyg. excl.) larg. 1·1.

Un exemplaire des collections du British Museum, provenant de Mt. Matang, W. Sarawak (*G. E. Bryant*), i.1914.

Aucune des descriptions publiées ne convient à cet insecte remarquable à plus d'un titre, mais surtout par sa sculpture mésosternale : le mésosternum n'a pas de strie marginale, mais à sa place se trouve de chaque côté une fovéole assez profonde en ovale très allongé; la strie transversale, bisinuée et très longue, est réunie à l'arc latéral par un angle prolongé en pointe; de nouveau

angulée sur la suture apicale, elle se prolonge obliquement jusqu'aux angles apicaux du métasternum, et se recourbe en dedans le long des hanches postérieures. Le dessous apparaît lisse, à part la mentonnière fortement et densément ponctuée, la moitié basale du mésosternum éparsément pointilleé, et les segments abdominaux entièrement ponctués, sauf le premier segment dont la partie médiane seule est éparsément ponctuée. Le métasternum est couvert d'une fine striolation longitudinale, visible à un fort grossissement (indiquée en partie seulement sur la figure); cette sculpture se trouve aussi sur la carène prosternale, sur les côtés du premier segment abdominal, et sur la tête, où elle est mélangée à la ponctuation. Le labre est largement échancré en devant et creusé dans chaque angle d'une fossette sétigère. La strie marginale de la tête est arrondie sur le devant de l'épistome, et très brièvement interrompue à la hauteur du tubercule latéral du front. En plus de ses impressions post-oculaires, le pronotum a encore au milieu de la base deux vagues impressions, longitudinales et courtes, assez écartées et moins ponctuées que le disque. La strie marginale des élytres, très abaissée sous les épaules, est distinctement prolongée tout le long du sommet, mais ne remonte pas contre l'angle sutural. Les tibias antérieurs ont une forte dent au tiers antérieur, et, sur la moitié basale, 2 à 3 denticules.

Il serait intéressant d'avoir d'autres exemplaires pour connaître les différences sexuelles probables.

A NEW SPECIES OF *MOCSARYA* KONOW IN SYRIA (HYMENOPTERA SYMPHYTA)

By Robert B. Benson, M.A., F.R.E.S.

(*Department of Entomology, British Museum.*)

Among some insects recently lent to me for study by Dr. F. Maidl, Kustos of the Naturhistorisches Museum, Vienna, I found a single specimen from Syria belonging to an undescribed species of *Mocsarya* (Orussidae). The Orussidae are a group of peculiar interest owing to their extreme scarcity in collections. Only two species of *Mocsarya* have been described heretofore: *M. metallicus* (Mocsáry) recorded from Ceylon and Sunda, and *M. oberthuri* (Saussure) known only from a single specimen collected in Madagascar (or Réunion Isle). As I have recently dealt with these species (1935, *Occas. Pap. Rhodes. Mus.*, **4**: 1–10, figs. 1–10), it is not necessary to say more about them here except in comparison with the new species.

Mocsarya syriaca sp. n.

♀. *Colour*:—black with a bluish-green metallic lustre; abdomen with segments 3 to 8 red; trochanters, apex of front tibia, middle and hind tibiae, together with all tarsal segments reddish-brown. Wings hyaline at base, brownish at apex, brownish patch occupying the apical two-thirds of the radial cell in the fore-wing. *Length* 13 mm.; fore-wing 9 mm. ♀. *Pubescence* sparse and pale; absent on vertex of head, mesonotum and the 4 basal terga of abdomen except at the sides. *Puncturation* very coarse, strong and reticulate on head; on thorax coarse and strong except for the middle line of the mesonotum which is raised and unpunctured, while on the pronotum, pro- and meso-pleurae as well as the scutellum there are shining spaces between the punctures; on the abdomen the puncturation is dense except on the segmental margins, but much finer than on the thorax, while the spaces between the punctures are dull with very fine rugulosity. *Structure*:—mouth-parts normal (that is vestigial); antennae unfortunately lost; carinae

on face as in *M. metallicus* (Benson, *loc. cit.*, fig. 6); but the anterior ocellus is not surrounded by a carina joining the front two tubercles of each lateral row as in this species; the tubercles on the other hand are arranged in two rows converging behind as in *Chalinus plumicornis* Guérin (Benson, *loc. cit.*, fig. 7), distance between the eyes on the vertex equal to about two-thirds the breadth of an eye; posterior ocelli separated from eyes by about one-half diameter of an ocellus. *Wings* :—venation as in *M. metallicus* (Benson, *loc. cit.*, fig. 1), but that the anal cell is slightly longer than the free part of the anal vein in the fore-wing and that in the hind-wing the transverse vein is received outside or apical to the basal vein. *Legs, abdomen*, etc., as in *M. metallicus*.

SYRIA : Akbés, 1 ♀ (*O. Abt*), in the Naturhistorisches Museum, Vienna.

In the red colour of the abdomen this species is quite unlike any of the five previously known species of MOCSARYINAE which are uniformly metallic blue, green or purple; in general appearance it resembles *Orussus abietinus* Scopoli, but the thorax is distinctly metallic and the abdomen more heavily punctured, while of course the venation and structure of head show at once that it is generically distinct. The carinae on the face, the distance of ocellus from eye * and the form of the abdomen indicate that the species belongs to *Mocsarya*; on the other hand the form of the anal cell in the fore-wing and the arrangement of the tubercles on the head resemble those of *Chalinus*. In the convergence of the eyes on the vertex, so that the distance between the eyes here is less than the breadth of a single eye, the species is unlike any of the previously known species of MOCSARYINAE in which the distance between the eyes here is always considerably greater than the breadth of a single eye.

* In *Chalinus* the ocellus actually touches the eye-margin, while in *Mocsarya* it is separated by about half the diameter of an ocellus. This point was not noted in my previous paper.

A LARVA OF THE SUBFAMILY BALGINAE (COL., ELATERIDAE)

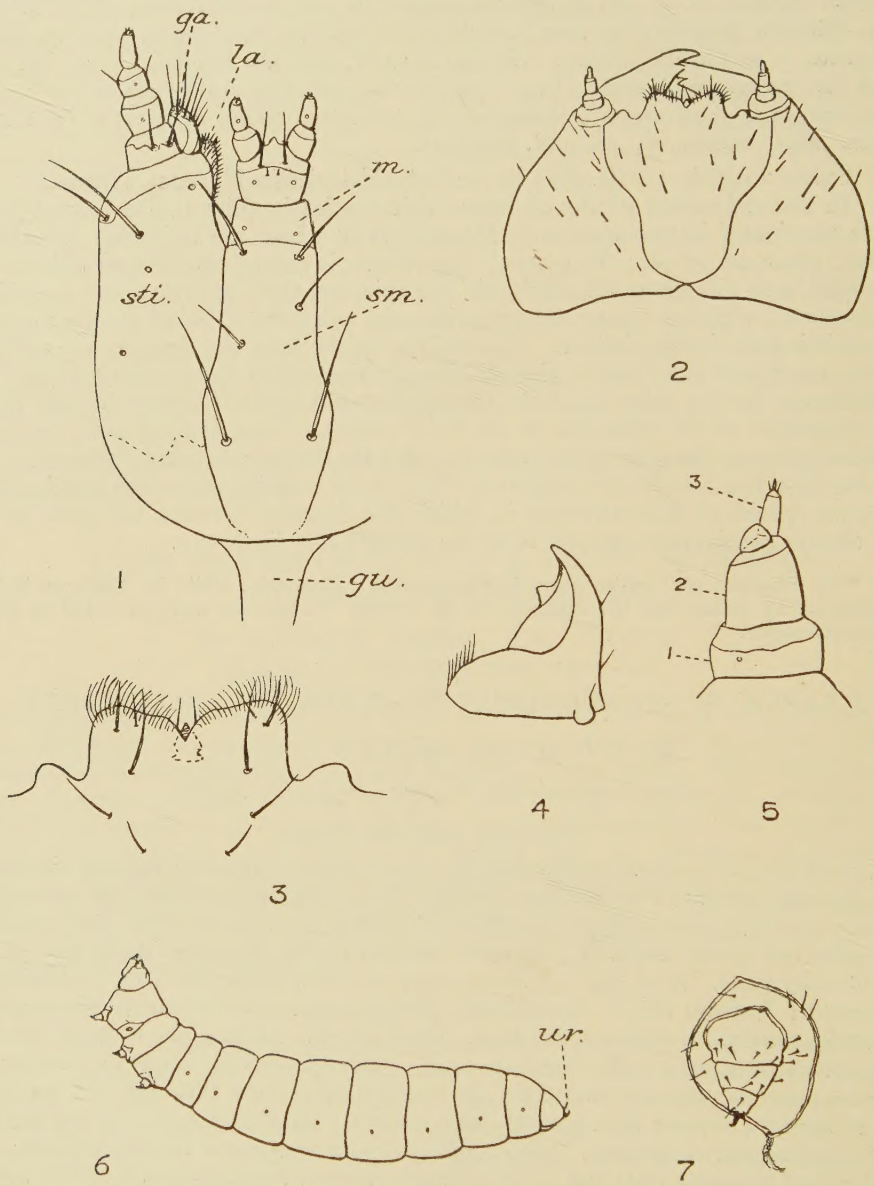
By J. C. M. GARDNER, I.F.S., F.R.E.S.

(*Forest Research Institute, Dehra Dun, U.P. India.*)

Cussolenis mutabilis Bonv.

Larva (figs. 1–7).—Body soft-skinned, stout near middle of abdomen, tapering strongly to the small upturned head and more gradually to the posterior extremity, the segments nearly circular in cross-section; mandibles, claws and caudal points dark, mouth-parts, spiracles and certain marks on prothoracic sternum faintly pigmented, the greater part of the body white. Head (fig. 2) narrower than prothorax, wider than long, moderately depressed; flattened above, convex below; frons extending to the weakly emarginate posterior margin, the sutures rather faint. Ocelli absent. Antenna (fig. 5) short, three-segmented, borne on a rather large soft basal cushion immediately lateral to mandible; the basal segment strongly transverse; the second slightly longer than wide and bearing on its apex the elongate third segment and a wider but much shorter, more or less hemispherical secondary appendage. Labrum and clypeus not present as separate structures; a thin rigid transverse plate (figs. 2, 3) continued anteriorly from epistoma is divided into two lobes by a median cleft in the anterior margin; each lobe with a thin fringe of hairs; occupying the median cleft and slightly below it is a blunt corneous tooth with a styliform seta on each side. Mandibles (fig. 4) normal, rather large, each curved inwards, with acute apex, a small tooth nearer the middle and a pencil of setae at base of inner margin. The ventral mouth-parts (fig. 1) retracted, extending to about the middle of the ventral surface of the head. Maxillae with four-segmented palp, the apical segment slender and

elongate; stipes testaceous except posteriorly where it is soft-skinned and not clearly separable from cardo, galea entire, apically obtuse, setiferous; lacinia a weakly developed setose lobe. Labial palp (fig. 1) with basal segment about as long as wide, apical segment



FIGS. 1–7.—Larva of *Cussolenis mutabilis* Bonv. 1. ventral mouth-parts (*ga*, galea; *gu*, gula; *la*, lacinia; *m*, mentum; *sm*, submentum; *sti*, stipes); 2. head in dorsal view; 3. anterior margin of frontal plate; 4. mandible; 5. antenna; 6. larva in lateral view (*ur*, urogomphi or caudal points); 7. leg.

longer than wide; prementum well defined; mentum transverse, soft-skinned; submentum elongate, thin-skinned, not distinctly pigmented. Gula slightly more than one half as long as the head, defined by two narrowly separated sutures. Prothorax transverse,

without dorsal plates; anteriorly on ventral surface is a shining triangular plate which is unpigmented except for a median line. Following segments transverse, with weak dorsal and ventral transverse impressed lines across the middle; pleural areas vaguely defined. Ninth abdominal segment small, hemispherical, with two small upwardly curved brown points. Anal segment on ventral surface of ninth, broadly oval with longitudinal cleft. Legs (fig. 7) short, stout, the anterior pair separated by a little more than the width of the coxal joint, the others slightly more distant; four-segmented, the basal segment stout, transverse, the second transverse, the third slightly longer than wide, the fourth a slender, slightly curved corneous claw. Spiracles small, faintly pigmented, biforous. The body skin with a not very dense covering of short hairs. Length about 11 mm.

Several larvae and beetles with exuviae were taken from decaying logs attacked by larvae of the Eucnemids *Adelothyreus bangalensis* Fleut., and *Arhipis orientalis* Fleut., Kalimpong, Bengal (*Balwant Singh*). The species appears to be predacious on early stages of Eucnemidae; the collector on one occasion found a larva feeding on an Eucnemid pupa.

References to the subfamily Balginae are given by Schenkling *in* Junk's *Catalogus Coleopterorum*, **96**, Melasidae (Eucnemidae). Lameere considered it probable that the group should be regarded as a subfamily of the Elateridae and van Emden * has recently shown that the structure of the larva of *Lissothyreus histrio* Guér., confirms this view. In known Eucnemid larvae the mandibles are either outwardly directed or are represented by rigid projections from the head; the ventral mouth-parts are minute, the maxillae without galea or lacinia, the labium with a sucking tube extending to its apex, legs represented by minute circular spots. The larva of *Cussolenis* has none of these characters and is clearly of the Elaterid type. The subfamily characters of the Balginae indicated by van Emden cover *Cussolenis* as well as *Lissothyreus*; the body is soft-skinned, robust, with two very small caudal points; legs small but distinct; the frons extending to posterior margin of head. The following points in the structure of the *Cussolenis* larva may be noted: Mandible with distinct tooth near middle of cutting edge. The structure of the nasale approaches that of the first stage larva of *Agriotes obscurus* L., as figured by Rymer Roberts.† The galea is apparently entire.

Monsieur E. Fleutiaux kindly identified the associated beetles.

* 1932, *Ann. Soc. ent. Belg.*, **72** : 211. † 1921, *Ann. appl. Biol.*, **8** : 193.

A NEW GENUS OF ANTHICIDAE WITH THREE SPECIES FROM SOUTH INDIA (COL.)

By Dr. Rudolf F. Heberdey.

(*Graz, Austria.*)

Communicated by Dr. K. G. Blair, F.R.E.S.

In 1863 Motschulsky described a new species of the genus *Formicomus* (1863, *Bull. Soc. Moscou*, **1863** (2) : 491), which is very distinct in its small size, its entirely brown colour and the absence of any pubescence. In my collection I found two specimens, which coincide throughout with the description of Motschulsky. A close study of them convinces me that they do not belong to the genus *Formicomus* but form a new genus, which I name *Phalantias*,‡ according

‡ φαλαντίας = baldness.

to the entirely naked surface of the species belonging to it. A second species of this genus I found in my collection mixed with the first, a third I received for determination from Dr. K. G. Blair of the British Museum.

Phalantias gen. n.

Surface very shining and entirely glabrous, only on the disc of the head and of the prothorax in some cases with a pair of long stiff setae arising from rather large punctured dots. Eyes rather small. Neck slender, one-sixth as broad as the head. Ultimate joints of the maxillary palpi not securiform, a little truncate at the apex, penultimate joints not denticulate. Antennae rather short with three slightly enlarged terminal joints. Prothorax formed as in other ANTHICIDAE, somewhat longer than broad, only slightly enlarged towards the apex, scarcely constricted behind the middle, in the middle of the front margin with a large shallow fovea half-way up the vertical sides, with a very fine sharp carina extending from the base to the point where the prothorax begins to be enlarged towards the apex. (This carina cannot be compared with the marginal carina of the prothorax of other families, since in *Phalantias* it is scarcely prominent beyond the strong lateral rotundity of the prothorax.) Elytra oval, much narrowed towards the base with little-marked shoulders. Alae well developed. Femora of the middle and hind legs strongly clavate. Penultimate joints of the tarsi simple, not bilobed. *Underside* for the greater part clothed with sparse yellow decumbent pubescence; furthermore the head with two rows of long erect yellow hairs beginning at each side of the neck and slightly converging towards the base of the labium. Prosternum before the coxae with a deep fovea, this and the surrounding parts covered with long erect yellow hair. Mesosternum a large glabrous plate forming at the sides two sharp ridges, which project strongly beyond the lateral parts of the mesosternum (episternum and epimerum). Each of these ridges bears a row of long stiff somewhat curved setae, which cover the lateral parts of the mesosternum. On the disk of the mesosternum are three ribs arising anteriorly from nearly the same spot, but diverging backwards, the median one extending to between the coxae, the lateral ones abbreviated. Between the ribs the mesosternum is a little depressed. Metasternum very long with two nearly parallel ribs arising from the lateral margin of the mesocoxae but not attaining the posterior margin of the metasternum. First sternite of the abdomen as long as second and third together, intercoxal process narrow, and the epimera of the metathorax a little angularly projecting. This description of the underside is based on the exhaustive study of only one species (*flavicornis* Mots.), but as most of the characters are also visible from the side if the specimens are well prepared, the essential marks described above apply to all three species, and only slight differences may have been overlooked. *Male copulatory organ* represented by a simple penis as in *Anthicus*, without any modification of the last abdominal segments as in *Formicomus*.

Genotype: *P. flavicornis* Mots.

The three species may be distinguished as follows:—

A. Disk of head and prothorax with a pair of long stiff setae each arising from rather large foveate punctures.

B. Prothorax near the apex scarcely broader than at the base; head longer than broad, temples behind the eyes nearly rectilinear, converging like a pointed cone; antennae of one colour . . . 1. *flavicornis* Motsch.

BB. Prothorax near the apex considerably broader than at the base; head broader than long, temples behind the eyes converging in a curve and forming an obtuse cone; antennae of two colours.

2. *blairi* sp. n.

AA. Disc of head and prothorax without foveate punctures and without setae; prothorax near the apex scarcely broader than at the base; head large, longer than broad, temples behind the eyes converging in a slight curve and forming an obtuse cone, antennae of one colour . . . . . 3. *grandiceps* sp. n.

1. *Phalantias flavicornis* Motschulsky.

Entirely yellowish-brown, antennae, palpi and legs somewhat paler; glabrous, head and prothorax impunctate, except that on the disc of each is a pair of long stiff setae, arising from rather large deep punctures; prothorax on the basal third of the vertical sides with some very large punctures; elytra finely and sparsely punctured. *Head* rather large, longer than broad with moderately small eyes, temples twice as long as the eyes, nearly rectilinearly converging, posteriorly forming a tapering cone rounded off at the apex, which projects dorsally a little above the neck and corresponds with the apical fovea of the prothorax; antennae rather short, the three terminal joints distictly enlarged. *Prothorax* slender, much narrower than the head, more than half as long again as broad, very feebly constricted behind the middle, before and behind nearly of the same breadth, narrowed towards the apex in a strong arch; base distinctly margined. *Elytra* rather long, much enlarged near the middle, strongly nearly rectilinearly constricted towards the base, which is scarcely broader than the base of the prothorax; shoulders scarcely visible; alae well developed.

Length: 2 mm.

Ceylon (*G. Lewis*), 12.xii.1881. British Museum.
The original locality is the Montagnes de Nura-Ellia in Ceylon.

2. **Phalantias blairi** sp. n.

Pitch-brown, elytra, legs and palpi somewhat paler, antennae dark, nearly black, the base reddish-brown, the two or three terminal joints pale yellowish-brown; glabrous, finely, head somewhat more strongly punctured, that and the prothorax sparsely, elytra rather more densely punctured; disc of head and prothorax each with a pair of long stiff setae, arising from rather large deep punctures, base of prothorax strongly and at the sides rather coarsely punctured. *Head* large, broader than long with rather small eyes, temples about twice as long as the eyes, narrowed towards the base in a flat curve forming an obtuse but rather pointed cone, which projects dorsally distinctly above the neck and corresponds with the apical fovea of the prothorax; antennae rather short, the three terminal joints distinctly enlarged. *Prothorax* rather compact, scarcely longer than broad, distinctly narrower than the head, the sides in the basal third parallel, towards the apex moderately, nearly rectilinearly enlarged, there half as broad again as the base, then narrowed in a very strong curve to apical collar; base distinctly margined. *Elytra* moderately long, sides strongly rounded, much constricted towards the base, which is scarcely broader than the base of the prothorax, shoulders scarcely visible; alae well developed.

Length: 2·6 mm.

Ceylon (*G. Lewis*), 19.ii.1882, British Museum.

3. **Phalantias grandiceps** sp. n.

Entirely yellowish-brown, antennae palpi and legs somewhat paler; glabrous; head finely and sparsely, elytra indistinctly punctured, prothorax on the disc impunctate, at the sides of the base with very large punctures. *Head* very large, nearly twice as broad as the prothorax, longer than broad, with rather small eyes, temples about twice and a half as long as the eyes, converging towards the base in a flat curve forming an obtuse cone,

which projects dorsally a little above the neck and corresponds with the apical fovea of the prothorax; antennae rather short, the three terminal joints distinctly enlarged. *Prothorax* slender, scarcely constricted in the basal third, nearly of the same breadth, before and behind, narrowed towards the apex in a strong curve, base distinctly margined. *Elytra* rather long, moderately enlarged near the middle, narrowed towards the base, which is scarcely broader than the base of the prothorax, shoulders scarcely visible; alae well developed.

Length: 2·2 mm.

Madras: Nilgiri Hills. Type in my collection.

NEUE CASSIDINEN UND HISPINEN (COL.) AUS DEM BRITISH MUSEUM

Von F. Spaeth

Communicated by G. J. Arrow, F.R.E.S.

Die Herren Sir Guy A. K. Marshall und Gilbert J. Arrow haben mir in der letzten Zeit eine Anzahl Cassidinen und Hispinen zur Determination übersendet, unter welchen sich die nachfolgenden neuen Arten fanden. Wie immer waren beide Herren so liebenswürdig mir Belegstücke für meine Sammlung zu überlassen, wofür ich sie bitte meinen besten Dank entgegen zu nehmen.

Megapyga chinensis sp. n.

Flügeldecken metallblau, Halsschild rötlichgelb mit einer vorn verschmälerten, schwarzen Mittellinie, Scheitel und Schildchen schwarz, Unterseite, Beine (mit Ausnahme der schwarzen Tarsen), das 1. Fühlerglied ganz und die Unterseite der drei folgenden rotgelb.

Der *eximia* Boh., sehr ähnlich, mit viel gröberen Punktstreifen auf den einfarbig blauen Flügeldecken, kürzerem Halsschild, dickeren Rändern desselben sowie des Seitendaches; die Seiten des Halsschildes laufen ohne Ausrandung geradlinig bis zu den Vorderecken. $7 \times 5\frac{1}{4}$ mm.

Süd-China: Cho-Ganh, 5.viii.1914; Holotypus im Brit. Mus.

Sindia jawalagiriana sp. n.

Ovata, convexa, subopaca, flavotestacea, antennarum articulis 5 ultimis nigris, prothorace rubrotestaceo, elytris basi, apice et extus indistincte piceis, protecto vittis tribus nigropiceis; prothorax fere semicircularis, basi sat profunde bisinuatus, extus dente parvo, disco crebre rugoso; elytra prothorace vix latiora, humeris late rotundatis nec prominentibus, lateribus parallelis, apice rotundato, disco utrinque tricarinato, sat profunde, irregulariter punctatostriato; protecto haud deplanato, rugosopunctato. 7×5 mm.

India or.: North Salem, Jawalagiri (Forest Research Institute, Sandal Insect Survey).

Gleichmässig gewölbt, fast matt; Unterseite, Beine und Fühler bräunlichgelb, die 5 letzten Glieder schwarz; Halsschild mehr rötlichgelb, mit etwas dunklerem Scheibenmittel, aus dem zwei hellere Flecke sehr unscharf hervortreten; Flügeldecken schmutziggelb, pechbraum bis schwarz gesprenkelt: gelb sind ein gemeinsamer, grösserer Fleck, der von der Höcker-Querleiste bis vor den Abfall, aussen auf die zweite Rippe reicht, ferner einige Knötchen auf den Rippen und je drei Flecke auf dem Seitendache: ein längerer in der Mitte, innen durch die hohe Seitendachbrücke eingeschnitten, dann zwei hinten, davon der letzte

gleich neben der schwarzen Nahtkante. Die dunkle Färbung nimmt, vielfach durch helle Flecke unterbrochen, die Basis bis zur Höckerleiste, den Aussenteil neben der zweiten Rippe und den Abfall ein; das Seitendach ist sonst schwarz, ganz vorn mit einem unscheinbaren rötlichen Fleck.

Mittelfeld des Kopfschildes dreieckig, ohne scharfe Kanten, undeutlich punktiert. Das dritte Fühlerglied hat nicht ganz die doppelte Länge des zweiten, die folgenden drei sind etwas kürzer, die fünf Endglieder sind verdickt, etwas flach gedrückt, matt und behaart. Halsschild etwas breiter als halbkreisförmig; die Seiten gehen mit gleichmässiger Rundung in den Vorderrand über und sind vor der Basis sehr wenig zu dem die Hinterecke bildenden Basalzahn verengt, neben dem die Basis tief ausgerandet ist; die Oberseite ist dicht gerunzelt, auf der Scheibe nadelrissig und mit einem abgekürzten Mittelkielchen. Flügeldecken mit parallelen Seiten, breit verrundeten, nicht vorgezogenen Schulterecken; von den primären Rippen sind die ersten zwei deutlich, die erste höher, durch eine Leiste mit der Höckerstelle verbunden, auch vorn und zur zweiten sich mehrfach verästend, hinten bis über den Abfall hoch. Die Punktstreifen sind vielfach unterbrochen, wenig regelmässig und deutlich. Seitendach wenig geneigt, grob runzelig punktiert, Prosternum flach, sein Vorderrand anfangs steiler, dann weniger abfallend. Klauen nur aussen mit Kammzähnen.

Unter den asiatischen Aspidomorphiten mit nur aussen gekämmten Klauen steht die neue Art ziemlich isoliert; ihren besten Platz findet sie in der Gattung *Sindia*, mit deren Genotypus sie die parallele Körperform, die gleichmässige Wölbung, die tiefe Ausrandung der Halsschildbasis mit dem nach hinten vorspringenden Basalzahn und die hohen Rippen der Flügeldecken gemeinsam hat; sie weicht von ihr durch den Besitz einer Höckerquerleiste und die nadelrissige Skulptur des Halsschildes ab, durch welche Merkmale sich den Laccopteren nähert.

Das Imperial Institute of Entomology hat mir zwei Stücke zur Beschreibung übersendet, von welchen der Typus im British Museum ist und der Paratypus mir freundlich überlassen wurde.

Metriona salomonina sp. n.

Rotundata, convexa, nitida, flavotestacea, discis prothoracis elytrorumque nigris, flavomaculatis; prothorax ellipticus, lateribus late rotundatis, disco laevi; elytra prothorace basi latiora, latitudine parum longiora, sat fortiter striatopunctata; protectum latum, subdeplanatum, laeve. 6 × 6 mm.

Breit gerundet, gleichmässig gewölbt, glänzend, gelb, die Scheiben vorwiegend schwarz mit gelben Flecken; auf dem Halsschild ist eine hinten bis vor die Schulterbeule reichende, vorn beiderseits ausgerandete, schwarze Basalmakel auf der die schmale Mittellinie und zwei schräge Flecke gelb sind; bei einem Stücke erweitern sich letztere bis an den Vorderrand der Makel, bei einem anderen fehlen sie. Schildchen schwarz, innen zuweilen gelb.

Auf den Flügeldecken sind der letzte Zwischenraum und die Spitze gelb; jede Decke hat 5 bis 6 gelbe Flecke : 1 : innen an der Basis, rund; 2 : an der Höckerstelle, schräg und länglich; 3 : schräg, innen vor der Schulterbeule; 4 : klein, auch fehlend, in der Mitte neben der Naht; 5 : dahinter, grösser; 6 : aussen schräg vor der letzteren; ausserdem ist die Seitendachbrücke gelb. Die besonders aussen ziemlich groben Punkte der Streifen auf den Flügeldecken durchsetzen nicht die Reliefflecke.

M. salomonina ist der *M. dysphorica* m. (1919, *Ann. Mus. nat. Hung.*, **17** : 201) am ähnlichsten, aber kleiner, schmäler, mehr gewölbt, mit deutlicher gewinkelten Schulterecken, längerem, an den Seiten breiter gerundetem Halsschild; die Scheibe der Flügeldecken ist ausgedehnter schwarz, die gelben Flecke sind kleiner. Von den zwei ähnlichen Arten aus Neu-Guinea, nämlich

holmgreni subsp. *translapsa* m. (1915, *Ent. Mitt.*, **4**: 239) und *sexguttata* Boh., ist sie durch breiter verrundete Seiten des Halsschildes, weniger reliefe Flecken und breiteres Seitendach, sowie grössere Zahl der Flecken, überdies von *translapsa* durch die andere Form der Makeln auf Halsschild und Höckerstelle, von *sexguttata* durch den hellen letzten Zwischenraum verschieden.

Salomo-Inseln: Gizo (1931), Lingatu-Russel, 1932 (*R. A. Lever*). Typus und drei Paratypi im Brit. Mus., zwei Paratypi wurden mir von Sir G. A. K. Marshall freundlichst überlassen.

Metriona cristobalensis sp. n.

Praecedenti minor, minus convexa, nitida, flava, disco prothoracis macula basali lata nigra, antice utrinque emarginata; elytrorum disco nigro, utrinque maculis 3 prope suturam laete flavis, scutello et sutura ultra medium rufescentibus; prothorax lateribus late rotundatis, laevi; elytra illo multo latiora, angulis humeralibus subacutis, disco subtiliter seriatopunctato, maculis laevibus. Holotypus: 5 × 5 mm., Paratypus: 4 × 4 mm.

Kleiner, flacher gewölbt, kürzer und verhältnismässig breiter als die Obige. Glänzend, weisslichgelb, die Scheiben des Halsschildes und der Flügeldecken schwarz, letztere mit je drei runden, gelben Flecken hinter einander neben der Naht; die Scheibenmakel des Halsschildes ist quer, annähernd dreieckig, mit gewelltem, in der Mitte vorgezogenem Vorderrand; sie ist ganz schwarz oder hat einige sehr kleine gelbe Flecke. Die Scheibenmakel der Flügeldecken ist klein, lässt vorn den letzten, hinten zwei Zwischenräume frei und ist an der Brücke breit und tief eingebuchtet, die Naht und das Schildchen sind trüb braunrot.

Halsschild elliptisch, vorn kaum weniger als hinten gerundet, fast um die Hälfte breiter als lang, mit verrundeten Ecken und glatter Scheibe. Flügeldecken mit ziemlich scharfen, den Halsschild seitlich weit überragenden Schulterecken und innen feineren Punktreihen, die durch die Flecke unterbrochen werden; der Randstreif und hinten auch der vorletzte haben viel gröbere Punkte.

Salomo-Inseln: San Cristobal (*R. A. Lever*) x.1932. Holotypus im Brit. Mus., Paratypus mir freundlichst überlassen.

Oxylepis cicatricosa sp. n.

Valde convexa, fere globosa, subopaca, laete viridiflava; *O. deflexicolli* simillima, elytris densissime cicatricoso-punctatis, protecto parum minus declivi praecipue differt.

Hoch- fast kugelförmig- gewölbt, länger als breit, matt, einfarbig grüngelb (lebend jedenfalls hellgrün). Kopfschild trapezförmig, mässig länger als breit, flach, glatt, ohne erkennbare Stirnlinien. Fühler mässig lang, mit 5 dickeren Endgliedern, von denen besonders das 8. bis 10. breiter als lang und dicker als bei *O. deflexicollis* sind; das 2. ist fast kugelig, dicker, das 3. und 5. sind kaum um die Hälfte länger, das 4. und 6. sind gleich lang mit dem zweiten. Halsschild quer, trapezförmig, vor der Mitte am breitesten, ohne deutliche Skulptur. Schildchen dreieckig, mit verrundeter Spitze; hinter der Mitte ist eine seichte, bogenförmige Furche, die den Anschein erweckt, als wären zwei Schildchen über einander gelagert (eine ähnliche, aber schwächere Bildung zeigt mitunter das Schildchen von *deflexicollis*). Flügeldecken wenig breiter als der von den Schulterecken umfangene Halsschild, bis vor die Mitte beim ♂ mehr, beim ♀ kaum erweitert, bei dem ersteren nach hinten mehr verengt und hinten breiter gerundet; sehr stark gewölbt, ohne Eindruck im Basaldreieck, überall äusserst dicht punktiert; die Punkte sind sehr klein, rund, schwach vertieft und haben einen helleren, erhabenen Kern und schwach überhöhten Umkreis. Seitendach vorn sehr breit, hinten stark verschmälert, sehr steil, aber nicht ganz senkrecht abstürzend, an der Spitze sehr schwach aufgebogen, mit gleichartiger Punktierung wie die Scheibe.

4 Stücke in Aus (S. W. Africa, an der Bahnstrecke nach Keetmanshoop) (*R. E. Turner*); Typi im Brit. Mus., Paratypus in meiner Sammlung.

O. cicatricosa stimmt in der Körperform und Färbung ganz mit der mediterranen *deflexicollis* überein; es unterscheidet sie insbesonders die eigentümliche, kräftigere Punktierung der Flügeldecken; ferner ist das Seitendach von *deflexicollis* bei Ansicht von oben nicht sichtbar, da die Sichtgrenze an einer von der Schulter schräg über die Scheibe zur Nahtspitze führenden Linie endet; bei gleicher Ansicht sind von *cicatricosa* die ganze Scheibe und das Seitendach zu überblicken, weil sie zwar steil, aber nicht wie bei jener senkrecht abfallen; endlich ist die gemeinsame Ausrandung der Flügeldeckenspitze schwächer. Von der in 1933, *Rev. zool. bot. Afric.*, **22** : 357, beschriebenen *O. capensis* m., ist *cicatricosa* durch das Fehlen der Stirnlinien, die dichtere, narbige, mehr runzelige Punktierung der Flügeldecken, sowie die Grösse von $3\frac{3}{4} \times 2\frac{1}{2}$ mm. verschieden.

Oxylepis (**Embolocassis** subgen. n.) **cuneipennis** sp. n.

Die neue Untergattung unterscheidet sich von *Oxylepis* s.str.: Die hoch gewölbten Flügeldecken sind nach hinten keilförmig verengt, ihre Schulterecken sind spitzwinklig und weit nach vorn gezogen, das 3. Fühlerglied ist nicht länger als das zweite und etwas länger als das 4. bis 6. Glied.

Genotypus: *Oxylepis* (*Embolocassis*) *cuneipennis* sp. n.

Hochgewölbt, ohne Höcker, annähernd keilförmig, in den Schultern am breitesten, von da nach hinten geradlinig verengt, das ♂ breiter und kürzer, das ♀ viel länger und schmäler; matt, hellgrün.

Fühler kurz, ihr 1. und 2. Glied verhältnismässig dick, das 2. und 3. kaum länger als dick, das 4. bis 6. quer, die folgenden Endglieder verdickt, um die Hälfte länger als dick, das letzte länger und zugespitzt.

Kopfschild trapezförmig, an der Basis breiter als lang, flach, glatt und glänzend, ohne Stirnlinien. Halsschild mit wenig gerundetem Vorder-, innen geradem, von den Schulterbeulen an sehr schräg vorgezogenem Hinterrand, so dass die abgestumpften, herabgebogenen Ecken weit vor der Mitte liegen; bei Ansicht von vorn erscheint der Vorderrand als eine gerade Linie, der Hinterrand als Halbkreis; die Scheibe ist gewölbt, mit etwas zerstreuter, das Vordach mit dichterer Punktierung und glasig durchscheinendem Rand. Schildchen kurz dreieckig, mit verrundeter Spitze. Flügeldecken beim ♀ viel länger, schmäler und mit mehr vorgezogenen Schulterecken als beim ♂, keilförmig verengt; die Punktierung ist mässig fein, kaum gröber als auf dem Halsschild, überall gleich, ziemlich dicht, aussen undeutlich gereiht, ohne Randstreif. Seitendach vorn sehr breit, fast senkrecht abfallend, so dass die Unterseite hohl liegt, hinten schmal.

Epipleuren bis zur Spitze mit deutlichem Innenrand. Prosternum mit dreieckig erweitertem Fortsatz. Die sehr feinen, glatten Klauen ragen über die langen Borstenkränze des 3. Tarsengliedes kaum hinaus.

♂: 3×2; ♀: bis $4 \times 2\frac{1}{2}$ mm.

Cape Province: Matjesfontein, xii.1928 (*R. E. Turner*); Typi im Brit. Mus., ein Paratypus in meiner Sammlung.

FOUR NEW SPECIES OF *CAMPSOMERIS* (HYMENOPTERA: SCOLIIDAE) FROM THE MALAGASY SUBREGION

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Sir Guy A. K. Marshall has sent for identification specimens of some Scoliidae which he states are being introduced into Mauritius for the control of certain Melolonthid beetles which are attacking sugar-cane there. Three of the species concerned, although two of them were previously known to me from other sources, have never been described, and it therefore becomes necessary to publish their descriptions in advance of a more detailed study of Madagascan Scoliidae that I have in progress, in order that the names may be available for the purposes of the Imperial Institute of Entomology. The fourth new species, well known but masquerading heretofore under the incorrectly applied name of *rufa*, I have included for comparison to the closely allied form here described from Rodriguez Island.

Campsomeris pocillator sp. n.

♀. Black, the tergites with violaceous reflection; vestiture black, in part dark brown, the pygidial setae dark coppery-brown; calcaria black. Wings nearly hyaline, a little yellowish-smoky, more pronouncedly yellowish in the region of the cells. Costa piceous; other veins brown to orange-brown. Length 18 mm. *Head.* Clypeus smooth, a dense group of setigerous punctures on each lateral slope at base, not reaching to extreme sides, short fine wrinkles just above the anterior marginal rim, which is medially bluntly pointed and transversely striulate; spatium frontale and area frontale densely deeply punctate, bearing dense erect brown setae, the punctures continuing to the upper lobe of the eyes, entirely filling the sinus ocellaris; upper part of front impunctate, a group or row of 4 or 5 punctures extending from the hind ocelli to the lower angle of the upper lobe of the eyes; a few small punctures between the hind ocelli; a shallow basin extending from each hind ocellus to the eye; fissura frontalis, ocellar groove, and ocellar pits all wanting; vertex impunctate, except a line of fine punctures extending toward the corners of the eyes, the posterior surface densely coarsely punctate but the temples impunctate; occipital region and throat with much erect hair; temples contracted, narrow, the temporal ridge prominent. *Thorax.* Scapulae densely finely punctate, with much erect hair, longest at the humeral angles; mesoscutum deeply sparsely punctate throughout, more densely in front; scutellum more densely punctate, a median strip and the apical part free of punctures. Median area of metanotum densely deeply punctate, except its postero-lateral angles. Vertical ridge of mesopleura weak, not sharp, a strip of coarse punctures along it in front, on the lower plate, in front of this punctate strip and also the posterior surface, impunctate, smooth and polished; upper plate indistinctly divided from the lower; its medial area with close fine punctures as on the scapula, elevated as much but no more than the latter, therefore not forming a definite tubercle. *Propodeum.* Dorsal surface,

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except for a median pointed prominence, entirely rounding into the posterior face. Area horizontalis medialis with a triangular area terminating on the median prominence which is punctate similarly to the metanotum; area horizontalis lateralis with a transverse median punctate setiferous strip; posterior face smooth and impunctate. *Legs.* Longer hind tibial spur long and slender, apparently acute, but on close examination the extreme tip is seen to be slightly expanded. *Abdomen.* Tergite 1 with confused apical area of punctures, but no apical fringe; tergites 2 and 3 with broad basal sparsely punctate area, subapical row of setae and apical fringe; tergite 4 with subbasal and subapical rows and apical fringe. Lateral tooth of hypopygial margin small and concealed among the heavy setae.

Holotype and 2 paratypes from MADAGASCAR: Tamatave, vii.–viii.1934 (*L. P. Regnard*), the holotype in the British Museum. 1 paratype, MADAGASCAR: Ampanalana, 16.vi.1934 (*L. P. Regnard*), British Museum; 1 paratype, MADAGASCAR: Sainte Marie, Museum Paris; 1 paratype, Brickaville, v.1929 (*A. Seyrig*), Museum Paris; 1 paratype, Tampina, vi.1929 (*A. Seyrig*), Museum Paris.

This species may be distinguished from other Ethiopian species by the following characters: posterior tarsal spurs not distinctly spatulate; clypeus with its disc smooth; body and vestiture black; wings subhyaline; vertex with a shallow basin laterad of each ocellus; temples contracted and with a prominent ridge. It is perhaps most closely related to *pfeifferae.*

Campsomeris minutalis sp. n.

♀. Black, tergites iridescent, narrow apical margin of tergites 2 and 3 pale yellow, limited basally by the preapical row of setae; a short yellow apical stripe on each side of tergite one. Vestiture white, silky, not long or dense, that of front, occiput, mesoscutum, scutellum, metanotum and more or less on scapulae stained pale golden yellow; the preapical row of setae on tergites 2 and 3, the apical fringe medially on tergites 2, 3 and 4 golden yellow, fringe of tergite and sternite 5 dark brown, pale golden tomentum on temples, pleura, sides of scutellum and extreme antero-lateral angle of each area horizontalis lateralis, also, more sparsely, on metanotum and area horizontalis medialis; calcaria white. Wings subhyaline, cells stained yellowish, apical margin a little smoky. Length 12 mm. *Head.* Entire surface of clypeus caniculate, covered with 18 or 20 parallel carinae, not all of which are complete, converging at base; sculpture of sides of clypeus obscured by appressed silvery vestiture; area frontalis and spatium frontale densely deeply punctate, the punctures extending upward on the front to the upper lobe of the eyes, filling the sinus ocellaris, in which and around the margin of the eyes they are smaller; an area below the front ocellus devoid of punctures or nearly so; vertex, except for the orbits, impunctate above the ocelli to the summit, the posterior surface with coarse but sparse punctures; sinus frontalis wanting; a few punctures and a median groove between the ocelli; ocellar groove and ocellar pits present, a setigerous puncture beside each of the latter; a shallow groove extending from the lateral ocelli toward, but not reaching the sinus ocellaris; temples with sparse fine punctures somewhat concealed by tomentum, moderately contracted, the ridge only moderately distinct; temples wider than the width of the eyes at the sinus ocellaris. *Thorax.* Scapulae with evenly rounded surface and no ridges, closely punctate throughout; mesoscutum coarsely spatter-punctate, the punctures open behind and therefore the setae inclined caudad; punctation finer and denser on anterior margin, absent from a median area which does not reach the scutellum; scutellum with basal and lateral marginal rows of punctures and two punctures on the disc; meta-

notum with small setigerous punctures, absent at the apical middle; the areae laterales with shallow punctulation; vertical ridge of mesopleura complete and sharp on lower plate, absent from the upper; lower plate entirely punctate, the punctures behind the ridge minute, sparse and shallow; about $\frac{2}{3}$ of the upper plate punctate, this swollen, forming somewhat of a tubercle, but entirely rounded and devoid of any ridge. *Propodeum.* Area horizontalis medialis prominent medially at apex, the prominence carried laterally into a weak ridge which limits the dorsal area, disappearing as it reaches the areae laterales; surface of the area horizontalis medialis uniformly finely and moderately closely punctate throughout; area horizontalis lateralis more densely and finely punctate, the punctures surrounding a subbasal discal impunctate area finer and sparser; area medialis posterioris with very shallow and very sparse punctulation, bearing erect hairs, absent from middle below and denser under ridge at summit, and microscopic punctulation (obvious at × 30) dense in the middle below, but scattered sparsely among the larger punctulation, and bearing conspicuous appressed silky yellowish hairs; areae posteriores laterales with small shallow punctures, sparse within but becoming dense and irregular toward the outer margins. *Legs.* Both hind tibial spurs spatulate, the longer one immoderately so, its expanded apex nearly as wide as the apex of the metatarsus. *Abdomen.* Vertical surface and apical strip of tergite one, and basal area on tergites 2 and 3 with sparse, fine, setigerous punctures; subapical row of setae on tergites 2, 3 and 4; apical fringe of tergite one very sparse medially, of other segments well developed; apical fringes of sternites 2–4 white and copious. Tip of pygidium truncate, a blunt tooth interrupting each lateral margin; lateral tooth of hypopygium well developed and acute.

Type and 3 paratypes, MADAGASCAR: Tamatave, viii.1934 (*L. P. Regnard*), British Museum; 1 paratype, MADAGASCAR, 1917 (*D. d'Emmerez*), British Museum; 10 paratypes, MADAGASCAR: Salazamay, 17.ix.1934 (*L. P. Regnard*), British Museum; 1 paratype, MADAGASCAR: Majunga, Paris Museum; 1 paratype, MADAGASCAR: Sainte Marie, Paris Museum.

This species finds its nearest relative in *felina* Saussure * which occurs in Nyasaland and Natal. It may be distinguished from all other Madagascan *Campsomeris* by the striate clypeus; from species occurring on the mainland it may be distinguished by the following combination of characters: clypeus striate; longer hind tibial spur very widely expanded at tip; black except for narrow, yellow apical margins of tergites 1–3, interrupted medially on tergite one.

Campsomeris fax sp. n.

Campsomeris rufa Saussure and Sichel, 1864, *Catalogus specierum generis Scolia:* 179 (*nec* Lepeletier de St. Fargeau 1845).

♀. Entirely black, covered with long and conspicuous orange-red vestiture, a little obscure golden tomentum on the sides of the clypeus, on the temples, pleura, sutures of the thorax, behind the tegulae, etc. Wings smoky, the area of the cells yellowish; veins piceous. Calcaria piceous, their apices reddish. Length 21 mm. *Head.* Disc of clypeus smooth, anteriorly finely longitudinally wrinkled above the broad marginal rim, its side punctate and densely hirsute; area frontalis and spatium frontale coarsely punctured, obscured by dense red vestiture, the punctures reaching to the eyes at the upper margin of the sinus ocellaris; the latter impunctate; a patch of punctures extending from upper

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* See Bradley, 1931, *Ann. Mag. nat. Hist.*, (10) **8**: 173, for a statement of the character of the real *felina* Saussure, in contrast with what has been misidentified as that species.

corners of the eyes on to the vertex and continuous with the scattered sparse punctation of the posterior surface of the latter; front and vertex otherwise impunctate except for a few punctures among the ocelli; frontal sinus and ocellar groove wanting; ocellar pits present but inconspicuous; temples impunctate, wider than the eyes at the sinus, narrowed behind; temporal ridge well marked. *Thorax.* Pleural surface of pronotum with a depressed impunctate triangular area behind the collar; scapulae densely but finely punctate; mesonotum throughout with not dense, coarse, spatter-punctures, sparse medially, from which arise conspicuous decumbent red hairs, along the pronotal border also with denser finer punctures; scutellum uniformly closely spatter-punctate, except for a small median basal spot; metanotum densely, not coarsely, spatter-punctate, it and the scutellum with conspicuous decumbent red hair; lower plate of mesopleura with a sharp ridge, absent from the upper, its surface both behind and in front with coarse setigerous punctures, but those in front interrupted by an impunctate strip; upper plate sparsely punctate in front, closely so on the rounded low tubercle, and covered with erect setae. *Propodeum.* Dorsal surface rounding into the posterior without bounding ridge or median prominence; area medialis horizontalis with close, not too coarse, round, setigerous punctures except for a small median basal spot; areae posteriores with only very minute setiferous punctulation. *Legs.* Shorter hind tibial spur slightly, the longer distinctly, but gradually and not strongly widened apically. *Abdomen.* Sides and extreme base of first tergite densely, apical margin more sparsely covered with conspicuous red hair; basal part of tergites 2 and 3 with long sparse red hair, subbasal row of setigerous punctures on tergite 4 irregular, laterally the entire surface punctate; subapical rows of setae on tergites 2, 3 and 4 long, overlying and concealing the apical fringes, to the end of which the hairs reach. Pygidium and hypopygium rounded, their margins not interrupted, the teeth on the lateral margin entirely concealed by vestiture.

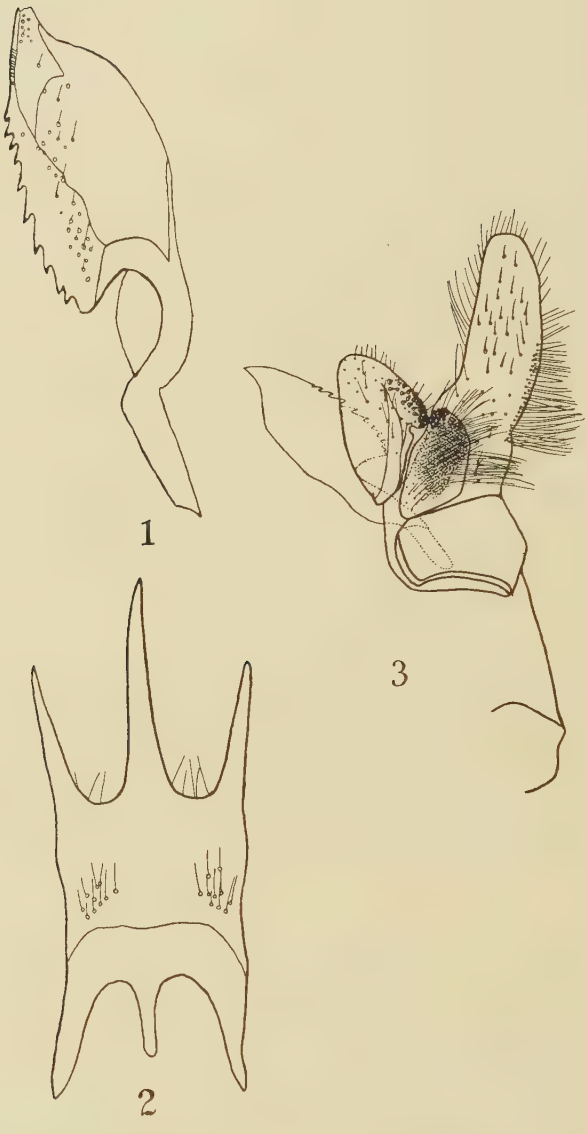
Holotype—Mauritius. Cornell University.

Since the days of Saussure and Sichel this well-known Mauritian species has passed under the name of *rufa* Lepeletier. *C. rufa* was, however, described from Spain, and is identical with *ciliata* Fabr. Lepeletier mentions a " variety " of twice the size from " l'Ile de France " (*i.e.* Mauritius). It is this Mauritian form to which Saussure and Sichel have applied Lepeletier's name *rufa*, but that of course can not be admitted. Although superficially bearing a strong resemblance to *ciliata*, the Mauritian *fax* is by no means the same species, as one will readily believe from its habitat alone. The two may be distinguished by the following couplet :—

Posterior face of propodeum very densely and coarsely punctate throughout, continuously so with the dorsal surface; vertex coarsely punctate except for a median area; temples very broad and but little contracted, the temporal ridge weakly indicated; vertical ridge of mesopleura rounded, not at all angulate . . . . . *ciliata* F.

Posterior face of propodeum with only very minute, sparse, setiferous, punctulation; vertex with only a group of punctures at the corners of the eyes or with a few scattered punctures; temples more strongly constricted, not so wide, the temporal ridge distinct; vertical ridge of mesopleura sharply angulate . . . . . *fax* sp. n.

This species may be distinguished by its colour and vestiture from all other Ethiopian species except *ciliata* and *rodriguezensis*. From the latter it may be separated by the characters noted below.



FIGS. 1–3.—*Campsomeris rodriguezensis* sp. n. 1. "Penisklappe" of ♂; 2. Hypopygium of ♂; 3. ♂ genitalia, ventral aspect of right-half.

Campsomeris rodriguezensis sp. n.

♀. Differs from the female of *fax* as above described in the following particulars : Vestiture more orange, not so fiery a red; wings in the region of the cells stained more strongly yellow, the veins there yellow-brown; vertex without a definite group of punctures at the corners of the eyes, but its upper part with a few widely scattered punctures throughout; scutellum without a basal median impunctate area, but narrowly impunctate medially on apical portion and the metanotum narrowly impunctate medially; lower plate of mesopleura punctate all over, rounded and without a sharp ridge; longer hind tibial spur acute.

♂. Black, the following parts yellow : Basal line on mandibles above; broad borders of clypeus except basal; tip of outer side of front femur, upper surface of front tibia, and stripe on 1st and 5th front tarsal segments above; upper surface of middle and hind tibiae; all of middle and hind tarsal segments except the last and the apices of the others; triangular spot occupying most of dorsal surface of tergite one, to the apex; apical half of tergites 2, 3 and 4, bisinuate in front; nearly all of tergite 5; narrow apical border slightly widened laterally of sternites 2, 3 and 4; yellow of tergites 2 and 3 crossed by a very sinuate reddish-brown line. Vestiture copious and long, orange-yellow, not so red as in the female, the fringes of the abdominal segments coppery; sides of face, sini ocellares, vertex, temples, pronotum, mesoscutum in front, sides of scutellum, metanotum, pleura and propodeum with golden tomentum. Wings a little smoky, the veins piceous; calcaria white. *Head.* Clypeus convex, smooth, the sides and base coarsely punctate; front impunctate except for an area below each lateral ocellus extending toward the antennae and reaching to the eyes, and a few minute punctures below the front ocellus; posterior slope of vertex with sparse concealed punctulation. *Thorax.* Close punctation of scapulae concealed by tomentum; mesoscutum punctate, sparsely in the middle, with decumbent setae; scutellum punctate except for middle at apex; area medialis of metanotum punctate except for a median strip. *Propodeum.* Vestiture long and copious; uniformly closely punctate, more finely and sparsely at extreme base. *Abdomen.* Dorsal surface of 1st tergite flat, depressed much below the level of the second, much narrower than the latter, meeting the vertical basal surface in a distinct median prominence, almost a tubercle; surface of the tergites sparsely, uniformly punctate, but the punctures denser, larger and deeper on the sides and apices and on the apical segments. Genitalia as figured.

Holotype (♀) and allotype (♂) from Rodriguez Island : The Corals, ♀, 16.ix.1930, ♂, ix.1930 (*J. Vinson*), British Museum.

This species is closely allied to *C. fax* above described, from which the ♀ may be distinguished by the characters above noted. From all other Ethiopian species the ♀♀ may be distinguished by the combination of the black body colour, orange-vestiture, acute hind tibial spurs, and smooth posterior face of the propodeum.

NEW ALEURODIDAE (HEM.)

By G. H. Corbett, B.Sc., F.R.E.S.

Bulgarialeurodes gen. n. (fig. 1).

Pupa case elongate-elliptical, margin toothed. Tracheal pores and folds absent. Dorsal disc defined by a chain of small pores on each side. Submarginal area without prominent setae but with a ring of small pores similar in size to those of sub-dorsal area. Vasiform orifice cordate.

Bulgarialeurodes is related to *Corbettia* Dozier. Both genera are characterised by a chain of pores around the subdorsal area but no conspicuous submarginal spines are present in *Bulgarialeurodes*.

Genotype : *B. rosae* sp. n.

Bulgarialeurodes rosae sp. n.

Pupa case on leaf yellowish but conspicuously covered with long white wax filaments. Elongate-elliptical. Margin toothed. Transverse and thoracic sutures reach margin. A distinct chain of small pores runs sub-dorsally around case and a similar ring is present in submarginal area. Between these two series of pores similar sized pores are also evident. The sub-dorsal chain is pointed anteriorly and somewhat rounded posterior to vasiform orifice. No indication of tracheal folds or teeth, but the sub-dorsal chain of pores in the region where tracheal folds are usually found in other species runs towards margin. Abdominal segments distinct, the sutures almost reaching sub-dorsal chain of small pores. Porous areas are defined mid-dorsally and sub-dorsally in the cephalo-thorax. Vasiform orifice large, cordate; operculum in some specimens fills about one-third of orifice leaving the tip of lingula exposed; in others about half fills orifice and obscures lingula.

Length about 0·8 mm., breadth 0·5 mm.

Host.—*Rosa damascena.*

Locality.—Bulgaria (*Dr. P. Tchorbadjiev*), 30.viii.1930.

Trialeurodes natalensis sp. n. (fig. 2).

The appearance of the pupa case on leaf unknown. Shape elliptical. Margin crenulate. Submargin with conically-shaped papillae, one side of case with twenty-three to twenty-eight small and with four to seven large, one of these being near thoracic pore and another near termination of caudal fold. These papillae are not necessarily in pairs and their size varies considerably, but in no specimen is the number of both large and small submarginal papillae on one side more than thirty-four and less than thirty. Sub-dorsum with four prominent pairs of large conically-shaped papillae, two on the cephalo-thorax and two on lateral margins of third and fourth abdominal segments. (One specimen shows another similar papilla laterally on metathoracic segment.) The tracheal and caudal pores represented with about six small but fairly conspicuous teeth, the former internally with a sub-circular porous area. Caudal fold very narrow. Spines on dorsum are not conspicuous, in some specimens a minute pair is present on cephalo-thorax, a rather larger pair near latero-anterior margin of vasiform orifice and a prominent pair at termination of caudal fold. The usual pair of small spines on anterior and posterior lateral margins of case are present. Vasiform orifice sub-cordate with inner margin toothed and with a projection from outer posterior margin. Operculum fills a little more than half the orifice exposing the lobed lingula; in some specimens, lingula projects beyond orifice.

Length 0·74 mm., breadth 0·46 mm.

Host.—*Nicotiana tabacum* L.
Locality.—S. Africa : Pretoria, Chief Entomologist, vii.1923.

Trialeurodes natalensis has been described from spirit material. It resembles *T. sesbaniae* Corbett, from which it is readily distinguished by possessing on one side of the case not more than thirty-four submarginal papillae. *T. sesbaniae* has on one side of the case not less than forty-two submarginal papillae.

Trialeurodes sesbaniae sp. n. (fig. 3).

The appearance of the pupa case on leaf unknown. Shape elliptical. Margin crenulate; submargin with a ring of seventy-one small and fifteen large conically-shaped papillae. In addition to the submarginal papillae, sub-dorsum with four pairs of large papillae, two on the cephalo-thorax and one pair on third and fourth abdominal segments. Tracheal pore represented by five to six small but distinct teeth, the fold by a semicircular porous area. The posterior extremity of case slightly extruded. Vasiform orifice subcordate with inner margin toothed and with projection from outer posterior margin. Operculum roundly cordate, about half filling orifice and exposing lobed lingula. Caudal fold narrow and armed with a pair of spines near its posterior extremity.
Length 0·8 mm., breadth 0·54 mm.

Host.—*Sesbania tripelti.*
Locality.—Australia : Canberra (*Dr. A. L. Tonnoir*), 8.viii.1934.

Trialeurodes sesbaniae has been described from spirit material.

In the paratypes a considerable variation occurs. Most have four pairs of sub-dorsal papillae but some have none, and one specimen has four pairs on one side and five on the other, three being situated in the abdomen. Other specimens. with the exception of the papilla at the caudal extremity, show no variation in the size of the submarginal papillae. Most specimens have seven pairs of large submarginal papillae, but others show a variation on one side of the case between one and eight large papillae. The number of small submarginal papillae on one side also varies between thirty-five and fifty, but in no specimen examined is the variation on one side of both large and small submarginal papillae less than forty-two and more than fifty.

Trialeurodes sesbaniae is closely related to *Trialeurodes natalensis* Corbett, but the last-mentioned species in the representatives examined has on one side not more than thirty-four both large and small submarginal papillae.

Trialeurodes mossopi Corbett (fig. 3c).

In the description * of *Trialeurodes mossopi* Corb., the subdorsum was stated to have four prominent pairs of conically-shaped papillae. Whilst this is correct, examination of other specimens shows the presence of five, six or seven pairs, the additional pairs, however, are not so prominent as those anteriorly on the cephalo-thorax, on second thoracic segment and on third and fourth abdominal segments. The additional pairs when present may be situated as follows :—a pair anterior to first thoracic suture, a pair on third thoracic segment and a pair on fifth abdominal segment. As stated in the description, there are about eighty small and ten large submarginal papillae. Other material shows, however, that, on one side, the number of smaller papillae varies between thirty-four and thirty-nine and the larger papillae between

* 1935, *Stylops*, **4** : 9–10.

four and six, but in no specimen is the number of papillae, both small and large, on one side less than forty and more than forty-eight. This corresponds closely to the number of submarginal papillae in *Trialeurodes sesbaniae* Corb. In the case of *Trialeurodes mossopi* Corb., the marginal papillae have a thickened rim and are not so markedly conical as those of *T. sesbaniae*. In *T. sesbaniae* the papillae are conspicuously conical and their apices only are thickened.

Dialeurodes greenwoodi sp. n. (fig. 4).

Pupa case uniformly brownish, without secretion, flattish and closely applied to under-surface of leaf. Sub-circular, margin entire incised by inconspicuous submarginal sutures. Whole dorsum covered with small but prominent circular pores. On the abdominal segments and cephalo-thorax clear porous areas are also present. With the exception of submarginal area, the case is markedly reticulated. The thoracic and caudal pores large and open some distance in from margin : the unmarked folds are prominent, the thoracic pair extending at least to the cephalo-thoracic suture. The transverse suture turns anteriorly and joins mid-thoracic suture, enclosing a conspicuous demarked area. Vasiform orifice small, sub-cordate and not toothed; operculum fills orifice obscuring lingula.

Length 1·10 mm., breadth 1·0 mm.

Host.—*Ficus* sp.
Locality.—Fiji (*W. Greenwood*), vii.1932.

This species is closely related to *Dialeurodes punctata* Corbett and *Dialeurodes cerifera* Q. & B., from which it is readily distinguished by the conspicuous pores throughout the dorsum and the shape of the cephalo-thoracic demarked area.

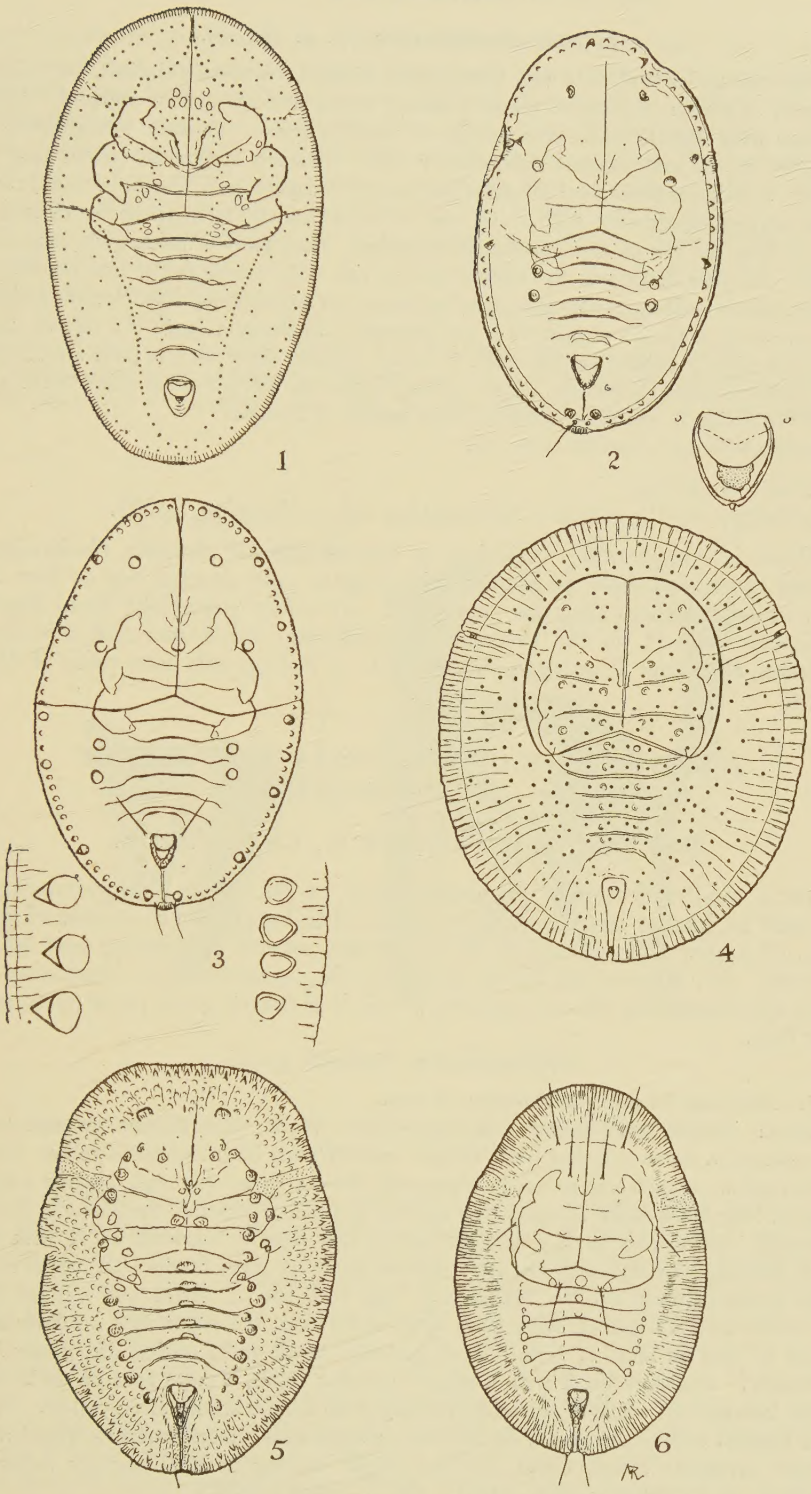
Bemisia hancocki sp. n. (fig. 5).

Pupa case, transparent, without evident secretion, on under surface of leaf. Elliptical, broadest across first abdominal segment, slightly depressed anteriorly, region of thoracic pores and posteriorly. Margin crenulate, crenulations more distinct at thoracic and caudal pores. A ring of minute submarginal spines is present, similar sized spines distributed throughout dorsum. Area between margin and dorsal disc granular. Thoracic fold distinct and covered with minute dots to rudimentary legs. Dorsal disc defined by prominent blunt-looking tubercles, about eight pairs in cephalo-thorax and eleven pairs in abdomen. In addition to these tubercles, there is a pair anteriorly in cephalo-thorax, two pairs anterior to mouth-parts, a pair mid-dorsally on first and second thoracic segments and one tubercle mid-dorsally on each of the first five abdominal segments. Vasiform orifice triangular, inner margins with short longitudinal folds. Operculum about half fills orifice, sub-cordate and slightly depressed laterally. Lingula sub-conical and almost extending to posterior margin of orifice. Orifice surrounded with a differentiated area which is sparsely spotted in the region of the narrow caudal fold.

Length 0·74 mm., breadth 0·54 mm.

Host.—Cotton.
Locality.—Uganda (*G. L. R. Hancock*), 1934.

The characters of the type are distinct. In the paratypes considerable variation occurs, especially in the prominence of the tubercles in the cephalo-thorax and abdomen. This species differs from *Bemisia gossypiperda* M. & L. in the absence of conspicuous spines and from *B. goldingi* Corbett essentially in the prominent sub-dorsal tubercles and in the mid-dorsal tubercles on the first five abdominal segments.



FIGS. 1–6.—Pupa cases of: 1. *Bulgarialeurodes rosae* sp. n.; 2. *Trialeurodes natalensis* sp. n. (2*b*. vasiform orifice); 3. *T. sesbaniae* sp. n. (3*b–c*. submarginal papillae of *T. sesbaniae* and *T. mossopi*); 4. *Dialeurodes greenwoodi* sp. n.; 5. *Bemisia hancocki* sp. n.; 6. *B. rhodesiaensis* sp. n.

Bemisia rhodesiaensis sp. n. (fig. 6).

Pupa case under surface of leaf, transparent, without secretion, elliptical, very slightly depressed at region of thoracic pores, broadest across first abdominal segment. Margin crenulate with slightly wider crenulations at tracheal pores. Thoracic fold sparsely but distinctly dotted and reaches rudimentary legs. In some specimens caudal fold also dotted. Sub-dorsal abdominal tubercles moderately conspicuous. The mid-dorsal tubercle on first abdominal segment distinct, the one on second abdominal segment less defined but more so than the one on third abdominal segment. Four pairs of moderately long spines present, one pair anteriorly in cephalo-thorax, one near mouth-parts, one laterally on cephalo-thorax and one on first abdominal segment. (The pair sub-dorsally on the abdomen common to some species of *Bemisia* is not present.) In the submargin is a ring of minute pores, one slightly larger than the other, in pairs. Similar sized pores in pairs are generally distributed throughout the case. The vasiform orifice shows no marked character to assist in differentiating *B. rhodesiaensis* from other species of *Bemisia*.

Length 0·78 mm., breadth 0·58 mm.

Host.—Tobacco.

Locality.—S. Rhodesia : Mtepamtepa (*M. C. Mossop*), i.1932.

There is considerable variation in individuals of *Bemisia rhodesiaensis*. Several specimens show no spines, others again only possess one or two long pairs whilst in others they are very small. It differs essentially from *Bemisia longispina* P. & H. in the presence of abdominal sub-dorsal and mid-dorsal tubercles, and from *B. gossypiperda* M. & L. in having only four pairs of dorsal spines.

A NEW SPECIES OF DRAGONFLY FROM SIKKIM (ORDER ODONATA)

By Lt.-Col. F. C. Fraser, M.D., I.M.S., F.R.E.S.

Among a small collection of dragonflies made by Mr. Oscar Lindgren in Sikkim and sent by him to Mr. Kenneth Morton of Edinburgh, are a number of specimens of a new *Chlorogomphus* which possess several interesting and unique features. Mr. Morton has kindly given me the opportunity of examining this series and describing the new species, which it gives me great pleasure to name after him.

Chlorogomphus mortoni sp. n.

♂. Abdomen 45 mm. Hind-wing 42 mm.

Head: labium straw-yellow; labrum entirely black; anteclypeus greenish-yellow traversed by a narrow medial black stripe; post-clypeus bright greenish-yellow with its borders below on each side narrowly edged with black; frons very high, bearing a double fringe of long black hairs, of which the anterior is directed forward, the posterior directed backward; the anterior surface pale brownish-yellow broadly bordered above with black which marking is broadly and shallowly concave along its upper border; the upper surface bright greenish-yellow broadly bordered at base with black; vertex and occiput black, the former with a fringe of black hairs directed forward, the latter with a double fringe similar to that on crest of frons. Eyes probably bottle-green during life, glossy black posteriorly. *Prothorax* black with a narrow anterior collar, a large spot on each side of middle lobe and the whole of posterior lobe except its middle bright citron yellow. *Thorax* black marked with citron yellow as follows;—narrow antehumeral stripes clubbed above, strongly divergent below, broad humeral stripes curving inwards slightly below and

almost meeting the previous stripes, a broad mid-lateral stripe narrowing abruptly below, and followed by a vestigial stripe represented usually by a small upper spot, finally the upper and lower borders of metepimeron; beneath thorax yellow marked with three large black spots. *Legs* black, anterior femora citron yellow within for basal half. *Wings* hyaline, apices tipped with blackish-brown and tornal angle of hind-wing suffused with amber yellow; costa bright citron yellow; pterostigma black, covering 3 cells; membrane pale brown; discoidal triangle in fore-wing 2-celled, its costal and distal sides equal and longer than basal; discoidal triangle in hind-wing 2–3 celled, its distal and basal sides subequal and longer than costal; 2 median nervures to all wings; nodal index— $\frac{16–26}{17–18} \mid \frac{26–16}{20–18'} \mid \frac{13–23}{16–16} \mid \frac{21–14}{19–15}$; the first and the tenth the primary antenodal nervures; 7 cubital nervures to all wings; anal-loop 9–10 celled; anal-triangle 3-celled; 2 rows of cells between the basal portions of *Cuii* and *IA*; a basal incomplete antenodal nervure usually present in all wings but this often complete (that is, there is a weak antenoda[1]

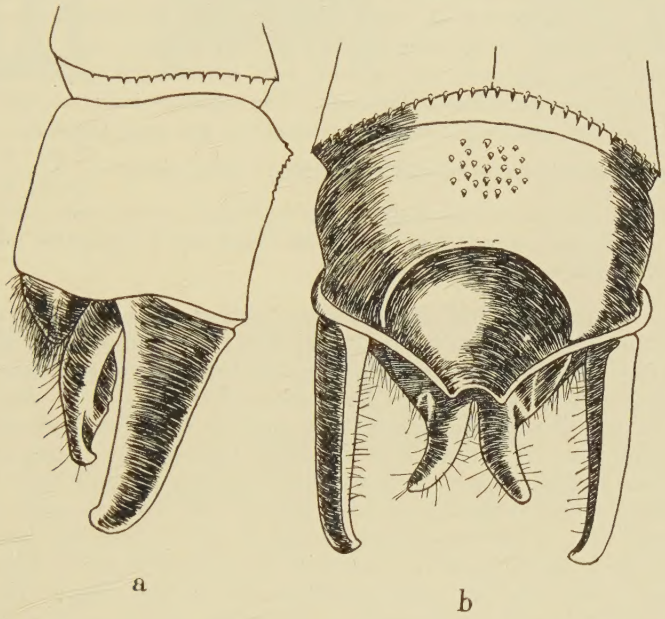


Fig. 1.—*a*, Left lateral view of anal appendages of *Chlorogomphus mortoni* sp. n., ♂; *b*, dorsal view of same.

basal to the basal strong or primary antenodal nervure). *Abdomen* black marked with citron yellow as follows :—segment 1 with an irregular spot on each side and a small mid-dorsal triangular spot; segment 2 almost entirely yellow with a large quadrate black spot on each side and a diamond-shaped spot on mid-dorsum which has a narrow tail connecting it with base of segment; segment 3 with a pair of narrow lunules confluent over dorsum of segment, and laterally a broad stripe extending from near the base to well beyond the jugal suture; segments 4 to 8 with apical lunules only which, on the latter segment, are very narrow and well separated on dorsum. Segments 1 to base of 3 tumid, then thin and cylindrical to apical end of 7 at which point the abdomen dilates rapidly, segments 8 to 10 being double the width of 6; segment 9 of the same length or slightly shorter than 10, the latter bearing a very obtuse dorsal spine near its base which is minutely

spined; on the apical half of dorsum of this segment is a deep circular excavation and the apical border is prolonged truncately beyond this. *Anal appendages* black, superiors as long as segment 10, widely separated at base, extending straight back, tapering from base to apex which is turned slightly inward, laterally compressed. Inferior nearly as long as superiors, broadly triangular with apex deeply bifid into two long robust divergent branches. Genitalia very similar to that of *C. campioni*.

♀. Abdomen 46 mm. Hind-wing 43 mm.

Closely resembles the male in its markings but these rather more extensive—the vestigial medial lateral stripe on thorax is prolonged by a fine line which is narrowly separated from the upper spot; the lateral stripe on segment 3 extends to the apical end where it becomes confluent with the apical annule and is reproduced again on segments 4 to 6 but is much abbreviated on the latter segment; segment 7 has a minute yellow spot on the jugal suture laterally; segment 2 has the black dorsal marking smaller and shaped like the head of an arrow. Wings hyaline including the apices but bases of all very broadly rich amber yellow to as far distal as distal end of discoidal triangles; in the hind-wing this area extends into the base of anal-loop and anal-triangle posteriorly but covers the whole breadth of fore-wing at the base. In addition there is a short costal stripe of diffuse amber tinting in the fore-wing only, extending from pterostigma nearly to node and occupying two spaces at the costa. The venation similar to male but rather closer; 13–17 cells in anal-loop; discoidal triangles of the same shape as in male and made up of 2 to 3 cells in fore-wing and 3 in the hind; nodal index— $\frac{13–22}{16–18} \mid \frac{23–13}{17–16}$. Anal appendages black, very short, conical and widely separated; vulvar scale short and broad, but slightly overlapping segment 9 where it is thickened into a corrugated ridge which is prolonged slightly and truncately at its middle.

Habitat.—Sikkim, 2–3,000 ft., without further data. The male is distinguished from all others of the genus by the bifid character of the inferior anal appendage and the female by the deep golden base of wings and coloured costal streak in fore-wing. The species is unique in the genus by the bifurcated nature of its inferior appendage, a very archaic structure resembling that of some Gomphines; it is unique in the order Odonata by possessing a weak complete antenodal nervure basal to the basal primary or reinforced antenodal, although this antenodal shows great variation. In the type male the costal half is present only in the fore-wings, in one of which there are two nervures present; in the hind-wings it is present in the subcostal space, absent in the costal space of one wing and only a vestige of it in the other. The allotype female has it complete in one fore-wing, only in the costal space of the other, a vestige in the costal space of one hind-wing and a similar vestige and present in the subcostal space of the other wing. In another female it is complete in both fore-wings but absent in the costal space of the hind-wings; another male is similar to this, differing only in that the two halves of the nervure do not coincide in one fore-wing; in a third male it is present and complete in three wings out of four but the two halves of the nervure fail to coincide in two of these wings. Finally the comparative lengths of segments 9 and 10 of the abdomen are unusual and recall that of *Crenigomphus*, whilst the obtusely spined and excavated dorsum of segment 10 are again unique in the genus *Chlorogomphus*. The *type* male and allotype female are in Mr. Morton's collection, as well as several males; two males and a female are in my own collection.

In so far as it is possible to place it, this species falls into group *campioni*.